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LETTER DATED 19 APRIL 1999 FROM THE PERMANENT REPRESENTATIVE OF
THE SUDAN TO THE UNITED NATIONS ADDRESSED TO THE PRESIDENT OF
THE SECURITY COUNCIL

On instructions from my Government, I have the honour to transmit to you a letter (see annex) from Mustafa Osman Ismail, Minister for External Relations, enclosing the report of the fact-finding committee of the Sudanese Universities Union on Al-Shifa Pharmaceutical Factory, destroyed by the United States on false allegations.

I should be grateful if you would have the present letter and its annex circulated as a document of the Security Council.

(Signed) Elfatih ERWA
Permanent Representative



Annex

[Original: Arabic]

Letter dated 4 April 1999 from the Minister for External Relations
of the Sudan addressed to the President of the Security Council

I refer to our previous extensive correspondence concerning the Sudan's request for the dispatch of a fact-finding mission to investigate the allegations on the basis of which the United States has sought to justify its destruction of the Shifa' pharmaceutical plant. I wish to inform you that some time ago the Sudanese Universities Union formed a scientific committee to investigate the facts concerning the plant and that this national scientific committee has now completed its task and adopted its report, a copy of which I am transmitting to you herewith. The report clearly demonstrates, in a scientific manner, that the allegations of the United States are unsupported by scientific logic and that they lack the most elementary scientific basis. The report's findings are supported by the material previously published by numerous scientists and international scientific bodies, including institutions and eminent persons in the United States itself, categorically excluding the possibility that the plant was engaged in producing weapons.

In sending you the report, I am hopeful that, alongside the cogent evidence already available, it will help to refute the United States allegations and enable the Security Council to adopt a resolution on the dispatch of a fact-finding mission so that the Council may apprehend for itself the manifest truth as established by independent scientific authorities. The Council will thus have fulfilled its assigned role in the maintenance of international peace and security under the Charter of the United Nations.

I request you to have this letter and its annex circulated as a document of the Security Council.

(Signed) Mustafa Osman ISMAIL
Minister for External Relations

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Enclosure

[Original: English]

Report of the committee of the Union of Sudanese Universities

CONTENTS

	<u>Page</u>
1. INTRODUCTION	4
2. FACTORY LOCATION	11
3. FACTORY OWNERSHIP	13
4. PRODUCTION OBJECTIVES AND PHYSICAL PLANT	16
5. PRODUCTION OF HUMAN AND VETERINARY DRUGS AND MEDICINES	20
6. CAPABILITY FOR CHEMICAL SYNTHESIS	23
7. BUILDINGS AND BUILDING EQUIPMENT	28
8. ENVIRONMENTAL IMPACT	36
9. LEGAL ASPECTS	39

1. INTRODUCTION

The destruction of Al Shifa Pharmaceutical Factory in Sudan National Capital by an American military air strike on August 20, 1998 took the people of the Sudan, if not most of the world, by surprise.

For although, the United States Government placed the Sudan, since 1993, amongst the list of countries that harbour terrorism, diplomatic representations between the two countries were, nevertheless, maintained until the day Al Shifa Factory was destroyed.

However, ever since 1993 when U.S. labelled the Sudan "a terrorist haven", senior U.S. administrators and intelligence officers continued making derided statements disfavoured to the Sudan Government.

Secretary of State for U. S. Madeline Albright, called the Sudan "a viper's nest for terrorists"; Miss Susan Rice, U.S. assistant secretary of state for African Affairs, commenting on Usama Ben Laden exodus from the Sudan, said "the Sudanese were insincere" and that "apart from his expulsion they have not done anything serious". (Article by Tim Weiner and James Risen - The New York Times, September 21, 1998).

Indeed many intelligence officials, including National Security advisor, Sandy Berger, all joined in waging this war of words and accusations against the Sudan Government, from 1993 onwards.

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By 1996 the U. S. Government took the decision to withdraw their embassy diplomats from Khartoum, ordering them to reside temporarily in Nairobi and, or Cairo (hence to manage their embassy business in Khartoum, somehow, by a make-shift arrangement) because, as they claim, of alleged lack of security and dangerous political conditions in Khartoum.

Whatever may have been the credibility of U. S. assessment of the security level in Khartoum in 1996, no other foreign diplomatic mission in Sudan seems to have found it necessary to follow U. S. suit.

Notwithstanding the subsequent demise in Sudan-American relations and the tense situation created by the bombardment of the two American embassies in East Africa, U.S. Government did not advance any official accusation linking the Sudan to these bombardments.

Sudanese nationals who happened to be in either Kenya or Tanzania at the time of the bombardment of the two embassies were nearly all initially arrested, but they were soon after released by the police authorities in the two African countries and were also acquitted by the F.B.I. team who arrived from U.S. to oversee ensuing investigations at the African scene of accidents.

The Sudan Government was thus taken totally unaware when in the early evening of August 20, 1998 the much cherished new Al Shifa Factory at Khartoum North was turned into ruins and burning debris by an American missile strike.

No sooner was the air raid on Al Shifa Factory over, than U. S. Defense Secretary William Cohen and Secretary of State Madeline Albright made an appearance before the national media, breaking the news of the U. S. missile attacks targeting :

Firstly, what they described as the Ben Laden (a Saudi national in exile) terrorists' training camps and hide-outs in Afghanistan, and

Secondly, Al Shifa Chemical (as reported) Factory in Sudan National Capital; the Factory they proclaimed manufactures chemicals of mass destruction for Ben Laden's use who, it is said, finances or at least partly owns the plant.

Until that moment, however, U. S. made no official accusation involving Ben Laden in the attacks of the two American embassies in East Africa.

However, within a few hours of the American air strikes becoming known, the Sudan and Al Shifa Factory became the focus of international news media.

Many Islamic and Arab countries responded immediately by condemning the U. S. for launching these military air strikes, especially for destroying Al Shifa Factory in Sudan, a third world muslim country, which, in its present state of development, could not have posed a serious threat to U. S. vital interests, any where in the world. Many other countries in the world expressed reservations regarding this high-handed

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offensive, considered contrary to United Nations Charter and Security Council procedures governing conduct of states with differences apt to lead to military confrontation.

Only few heads of some European states supported the United States attack on Al Shifa Factory; namely Prime Minister Tony Blair of Britain, Helmut Kohl the, then, Chancellor of Germany and a lukewarm support from President J. Chirac of France. On the other hand, the Russian President Boris Yulsin was vehemently critical of U. S. action.

Foreign technical personnel, familiar with Al Shifa Factory; those who assisted in its design and planning, others who supplied the machinery and technical equipment, foreign engineers who took part in its installation, all came out strongly refuting as groundless allegations of production at Al Shifa Factory, of chemical weapons, poisonous gases or Empta, a chemical for making VX nerve agents.

In the face of information on the Factory getting widely spread by the local and foreign news media the United States Government was obliged to modify their earlier statements about Al Shifa Factory and its ownership, as no material evidence was apparently forthcoming in support of allegations made by U.S. senior administrators on August 20, 1998.

Subsequently the Americans came up with a story of a soil sample said to have been secretly taken by one of their agents from the ground outside the Factory site, which revealed, under test, indications of Empta presence. But regardless of doubts that could be raised about the sample source, there is no guarantee that the sample had not been tampered with

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en-route to the particular laboratory in U. S. A.; furthermore the soil sample was not examined by any other independent laboratory in a third country.

The Sudan counter move against the American allegations was directed along various diplomatic and political channels, at both regional and international levels.

Specifically, they point to the following :

Firstly, they reiterated their former condemnation for the bombardment of the two American embassies in East Africa, expressing regrets for the grave loss of life and property.

Secondly, the release after initial arrest, of all Sudanese nationals who happened to be in Kenya and Tanzania at the time of the embassies bombardment, is proof enough of no Sudanese involvement in the events of U.S. embassies

Thirdly, Al Shifa Factory is a hundred per cent privately owned industrial plant, manufacturing human and veterinary medicines and drugs. It had not been owned in whole or in part, at any stage of its development, by the Sudan Government and never by Usama Ben Laden.

Fourthly, the Factory used to be open to visitors of all delinations, visiting heads of states, diplomats, distinguished guests, and professionals

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Fifthly, and most importantly, the Sudan Government did ask the U. S. Government to send a team of experts to the Sudan to investigate all about the plant, and to establish what Al Shifa Factory actually manufactures.

When the United States Government ignored this offer, the Sudan Government lodged a complaint with the United Nations and Security Council, repeating their request to send qualified investigators to clarify the facts about Al Shifa Plant.

Should the American allegations be proven false, Sudan Government wants U. S. Government to agree to the following:

- i- make an official apology to the Sudan Government, for having destroyed Al Shifa Pharmaceutical Factory,
- ii- pay full compensation, to indemnify the Factory owners and all other parties afflicted by their offensive.

The Council of Arab League, former U.S. president Jimmy Carter as well as many other organizations and eminent people from across the world, saw in the Sudan offer for an independent enquiry on Al Shifa Factory a means to resolve this conflict, hopefully restoring peace and understanding between the two parties.

Unfortunately the U. S. Government used its influence both at the United Nations and the Security Council, desuading them not to proceed immediately with the Sudan complaint, thus blocking for an indefinite

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period, a timely opportunity to uncover the truth about Al Shifa Factory crisis.

The Union of Sudanese Universities stepped in at this stage, to make a factual account about the nature of Al Shifa Pharmaceutical Factory, shedding light on those issues raised in connection with its destruction.

The committee entrusted by the Union of Sudanese Universities to perform this task had in mind the nature of its mission as an independent fact-finding body, not acting on behalf of any party.

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2. FACTORY LOCATION

Al Shifa Factory is located at the northern end of the industrial area of the town of Khartoum North; one of three towns which together make " Greater Khartoum " .

The industrial area of Khartoum North occupies the eastern side of older Khartoum North town, and is bound from the west by Sudan Railways Line heading north . It is easily reached by the inter-city road way system . The Factory is accessible through a new paved road branching off Kassala high-way which runs eastwards to the outskirts of Khartoum North city . The road to Al Shifa Factory marks the divide between residential estates, which surround the Factory site from the south and east directions . These estates are distinguished residential areas housing foreign diplomats and business men in addition to well-to-do citizens .

North of the Factory, lies Khartoum North Thermal Power Station, one of the main electric power stations in Khartoum . On the southern side, Al Shifa Factory is adjoined by a medium-size food processing plant; while small miscellaneous industrial plants are located in the immediate vicinity to the west of the Factory . The area east-wards of the Factory is a residential extension area, with widespread living quarters which are relatively newly planned, many of which are still under construction .

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Beyond the immediate environs of Al Shifa Factory there extends widely scattered settlements and villages, all of which are relatively heavily populated . Within these areas small animal farms, including diaries and poultry farms, are to be found .

In view of the vigorous growth of The National Capital in recent years, the industrial area embracing Al Shifa Factory can now be seen to be situated in the middle of Khartoum North city .

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3. FACTORY OWNERSHIP

The history of the ownership of Al Shifa Pharmaceutical Factory dates back to May, 1990 when a company by the name of Vet-Pharma was established as a private business enterprise. This company was incorporated in accordance with the Sudan Government Companies Ordinance, 1925, as a limited company owned by Al Nour Hassan Basheir and Muawia Mirghani Ibrahim. The license of the company was then limited to the production of veterinary drugs and medicines.

In 1994 and after a sell-out reshuffle of shares the company became the private ownership of Basheir Hassan Basheir (60%) and Ba Abboud Agencies for Trade and Shipping (40%). The new owners sought the extension of the production objectives of the Factory to include the manufacture of human drugs and medicines. After securing the necessary licenses the name of the company was changed, in accordance with article 8 of the Sudan Companies Ordinance, 1925, from Vet-Pharma to El Shifa Pharmaceuticals Industries Company Limited.

Towards the end of the year 1996 the Factory started production. It was still owned by Basheir Hassan Basheir, and Ba Abboud Agencies, but it was under a registered mortgage of U.S \$ 8,500,000 to the Eastern and Southern African Trade and Development Bank (PTA).

In March 1998 the ownership of Al Shifa Factory changed hands again. Ba Abboud Agencies sold all their shares to Ghinawa Company Limited, and Basheir Hassan Basheir sold his shares partly (16.66%) to Mr. Salah Al Din Muhammad Idris and partly (83.33%) to Ghinawa

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Company. Implicitly now the Factory became a private ownership of Salah Al Din Muhammad Idris (10%) and Ghinawa Company (90%). Ghinawa Company itself is a private investment, half owned by Salah Al Din Muhammad Idris (holding 300 shares of its total 600 shares).

Al Shifa Company files, deposited in the Office of the Registrar of Companies, Sudan, reveal that Al Shifa Pharmaceutical Factory is a business company which is owned by the private sector and is registered in compliance with the Sudanese Companies Ordinance, 1925. Neither the Sudan government nor any of its federal state institutions owned shares in this company at any time.

As one of the main reasons for the destruction of Al Shifa Factory the Americans initially claimed that Usama Ben Laden (a Saudi national in exile) either owned or had a financial stake in the Factory. On August 25, 1998 they modified their allegations when a United States intelligence official, giving a briefing to the media on the American strike, admitted that the ties between Ben Laden and Al Shifa Factory were "fuzzy" (News Article, Associated Press, August 25, 1998 at 20:23:36).

On the same day Reuters reported that a United States intelligence official said that he could not confirm any direct financial link between Ben Laden and the Plant, (News Article, Reuters, August 25, 1998 at 7:27 p.m. EDT).

In an intelligence briefing to Senators, American Defence Secretary, William Cohen, had to admit that the evidence linking Ben Laden to Al Shifa Plant was a "little tenuous", (News Article, Associated Press, September 2, 1998 at 09:25:00).

Legal ownership documents and papers at the Office of the Registrar of Companies in Sudan categorically refute any allegations of a connection, even a tenuous one, between Usama Ben Laden and Al Shifa Pharmaceutical Plant; be it ownership or a financial stake.

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4. PRODUCTION OBJECTIVES AND PHYSICAL PLANT

Vet-Pharma Company, the mother of Al Shifa, was first established in 1990 as a privately owned enterprise. The company's objective then, as its name implies, was confined to the manufacture of veterinary pharmaceutical products. During the early phases of execution of the project the objectives of the company were extended to include production of human drugs and medicines besides veterinary ones. In line with this, the name of the company was changed from Vet-Pharma to El Shifa Pharmaceuticals Industries Company.

Al Shifa Factory was planned for the manufacture of about 50% of the Sudan requirements of human medicines, and nearly all the country's needs of veterinary pharmaceutical products. A sizable portion of Al Shifa production was planned for export to neighbouring countries.

When Al Shifa Factory started commercial production in 1996 it was the largest and most modern pharmaceutical manufacturing complex in the Sudan and one of the most advanced establishments of its kind in the Middle East and Africa. The complex incorporated four factories, each specializing in the production of medicines of similar manufacturing requirements. The four factories were :

- 1- the General Factory,
- 2- the Beta-Lactam Factory,
- 3- the Veterinary Factory,
- 4- the Tuberculosis (TB) Factory.

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In order to meet the production targets, and for Al Shifa products to match international standards as well as become competitive in both the local and regional markets, the owners procured advanced relevant machinery and equipment from companies of international renown. A quality control laboratory which was adequately equipped was set up to ensure that Al Shifa products comply with internationally acknowledged specifications.

To maintain sustainable productivity, Al Shifa Company adopted a policy of human resources development and technical capability building. To achieve this goal the Company used to recruit foreign technicians and engineers to help in on-site training of its employees, while some of its staff received training abroad. Al Shifa Factory also provided on-site training for university students in chemistry, chemical engineering and pharmacy.

It is relevant here to highlight the production capacities of some of Al Shifa factories.

In the General Factory five lines of production had been installed. The line of the tablet form of medicine had a production capacity of 500 000 tablets per hour; the syrup line used to produce 32000 bottles per working shift and the dry suspension line 32000 bottles per working shift (8 hours). The injectable forms of medicine, ear and eye drops, used to be produced in the sterile area of the Main Factory Building at the rate of 20000 vials per working shift. The company was planning to expand its production lines; some of the necessary machinery and equipment were already on site at the time of the Factory's bombardment.

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In the Beta-Lactam Factory, two lines of production were installed; the capsule form line with a production capacity of 100 000 capsules per hour, and the dry suspension form line with a production capacity of 40000 bottles per working shift.

The Veterinary Factory housed lines for the manufacture of all forms of veterinary drugs and medicines including sterile injectable forms, powder in containers, sachets, drenches and boli. It was the only factory that used to produce animal medication in the Sudan.

All in all Al Shifa Factory has had facilities for the production of thirty five veterinary drugs and medicines. Of these, seventeen have already been marketed and the others were either on their way to the market or were in the process of being produced at the time the Factory was hit.

In the area of human medicines, twenty nine products had already been marketed, three had been manufactured but not yet released to the market and ten were in the pipe-line .

At the time of destruction of Al Shifa Factory the company's trademark was on the shelves of every pharmaceutical shop and dispensary all over the Sudan. This fact is in sharp contrast with president Clinton's National Security Advisor, Sandy Berger, who personally stated that "Al Shifa Factory has no commercial distribution as far as we understand. We have physical evidence of that fact and very, very little doubt about it" (International Herald Tribune, 25 August 1998).

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The Sudan government made public the fact that Al Shifa Factory had been in the process of filling a UN - approved contract to provide Iraq with \$ 200 000 worth of "Shifazole 2.5 per cent", a deworming drug for animals. The UN-Iraqi sanctions committee had approved the contract in January 1998 as part of the "oil for food programme", (News Article by Reuters, August 25, 1998, 4.57 PM, EDT). Publicity of this contract, undermines the American statement that "there was no evidence that commercial products were ever sold out of the facility" (ABC News comm., Washington, August 26, 1998).

The United States Government eventually conceded that Al Shifa Factory had in fact been commercially producing medicines and drugs. Some days after the missile strike, State Department Spokesman, James Foley, admitted that "that facility may very well have been producing pharmaceuticals". (The Toronto Star, August 29, 1998). The Times has also confirmed the Clinton Administration's belated acceptance of this fact "Now they admit, it made 60 per cent of Sudan medicine", (The Times, August 29, 1998).

5. PRODUCTION OF HUMAN AND VETERINARY DRUGS AND MEDICINES

Sudan has a large animal population and its resources of domestic stock alone have been estimated as 30.8 million cattle, 37.2 million sheep, 33.3 million goats and 2.9 million camels (1994/1995 figures), with an annual growth rate of 3.5%. The revenue in foreign currency from exports of live animals, meat and skins and hides was 135 million and 138 million US dollars for 1996 and 1997, respectively. Revenue for the first quarter of 1998 from animal exports amounted to 58 million U.S. dollars, almost equivalent to about 35% of the total returns from exports for that period. Such an enormous potential has drawn the attraction of investors both locally and from abroad, with ventures on beef, mutton, poultry and milk products and also on fisheries and veterinary services. These investments now exceed 52 billion Sudanese Dinnars in local currency and more than 500 million US dollars as a foreign component.

The growing industry in animal wealth is, nevertheless, in dire need of a wide range of controls; the most important of which is the need for animal disease control. Vaccines and drugs comprise the most effective line of defence against microbial animal diseases. The most common animal diseases in the Sudan include (a) microbial and (b) parasitic ones.

a) MICROBIAL ANIMAL DISEASES

1. The microbial animal diseases include anthrax, black leg, pasteurellosis, brucellosis, enterotoxaemia, diseases sequel to viruses, gangrenous mastitis and infectious necrotic hepatitis.

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b) PARASITIC ANIMAL DISEASES

The internal parasite diseases of animals are trypanosomosis, babesiosis, theileriosis, coccidiosis, gastrointestinal nematodiasis, fascioliasis and schistosomiasis. Also diseases of external parasites such as ticks and mites take their toll.

In contrast to bacteria and viruses unicellular or metazoan parasites have no commercial vaccines and the control of such disease agents relies mainly on chemotherapy.

Al Shifa Factory used to produce a variety of drugs that contribute significantly to the control of some of the microbial diseases as well as drugs that control the most ubiquitous and unique parasitic animal diseases with the heaviest adverse economic impact in the Sudan.

Thus Pamizole and Shifazole were intended for use against parasitic nematodes, especially those of the gastrointestinal tract, whereas Supramec is used both against nematodes and external parasites such as ticks and mites. Rafoxid is indicated for treatment of fascioliasis while Shifatrip is targeted against trypanosomes and babesia. These drugs were sold at 52% to 75% of the imported drug market price. Al Shifa Factory was in the process of producing other pharmaceutical products for use against other forms of parasitic diseases such as coccidiosis, trichomoniasis and also against tapeworms.

A wide spectrum of human diseases prevail in the Sudan. Malaria is considered the major public health problem. It represents about 40% of admissions to health centres and it is the primary cause of death in cases admitted to hospitals. Estimated figures for 1996/1997 indicate that there may be as high as 7 million malaria cases a year. The bill for treatment of

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malaria victims amounts to about 10% of an average family income. Chloroquine is the first line of treatment of malaria in the Sudan. Al Shifa Factory used to produce this drug under the name Shifaquine. It also produced drugs for the treatment of other diseases such as tuberculosis, another endemic disease in the country.

Records for 1997 and the first half of 1998 show that there were 34,345 new cases and relapses and extra-pulmonary cases of tuberculosis. Shifampicin, a product of Al Shifa Factory besides its marked therapeutic effects against the disease, is about 50% cheaper than similar imported drugs. This reduction in price is especially significant considering the fact that antituberculosis drugs are normally very expensive, and the treatment is generally protracted. Further, Al Shifa Factory used to produce drugs that were effective against hypertension (Atonil), diabetes (Glibanil), arthritis and rheumatism (Volanil, Profenil and Shifamol), gastric and duodenal ulcers (Famonil) and chest, urinary tract and skin infections in both adults and children (Amoxonil, Ciproshif, Erythronil).

Experiments conducted on six types of pathogenic bacteria showed that Al Shifa products are highly potent; results indicate them as the drugs of choice in each incidence.

In conclusion the destruction of Al Shifa Factory represents a loss of nearly 50% of the total pharmaceutical products consumed in the country. Heavy and uncontrollable infestation of livestock with parasites would lead to economic losses in human food and national income, as such diseases would definitely result in heavy mortalities and decreased productivity of farm animals. With respect to the impact on the human sector endemic diseases, known to be of high mortality rate, will be rampant, to say the least.

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6. CAPABILITY FOR CHEMICAL SYNTHESIS

This part of the report aims at investigating the American claims that Al Shifa Factory was targeted by the missile strike because it engaged itself in the manufacture of chemical weapons and in the synthesis of Empta (O-ethyl methyl phosphonothionic acid), a chemical which is an immediate precursor to the nerve agent VX.

It should be clearly understood from the start that the role of Al Shifa Factory was limited to pharmaceutical formulation of drugs and medicines and not their synthesis. The raw materials from which medicines and drugs were formulated were imported as readily synthesized chemicals from foreign international companies with which Al Shifa Factory collaborated.

A skeletal outline of the fundamentals of the chemistry and synthesis of poisonous organophosphorus compounds, including nerve agents is given in the text of the full Committee Report on Al Shifa. This was followed by scrutinizing the lists of analytical chemicals, machinery, equipment and general laboratory apparatus procured by Al Shifa Factory with the objective of answering a central key question: was Al Shifa Factory ever capable of synthesizing chemicals, be it pharmaceutical ones or nerve agents?

The following conclusions have been drawn from the above scrutiny:

1. All the analytical reagents and chemicals in use by Al Shifa Factory are those recommended by the United States and the British Pharmacopoeia for the standard testing of the quality of drugs and medicines in quality control laboratories.

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With reference to the list of chemicals, it is impossible to see how Al Shifa Factory could have engaged itself in the chemical synthesis of organophosphorus compounds of the general formula $RP(O)Cl_2$, which are basic starting materials for the synthesis of many organophosphorus poisons. The lists do not contain essential starting substances for these types of synthesis, e.g. phosphorus, chlorine, phosphorus(III) chloride, phosphorus oxychloride or trimethylphosphite; they also don't contain chemicals from which organolithium, organomagnesium or organomercury compounds (which are the usual alkylating agents) can be prepared.

Chemicals and solvents in stock, as distinct from raw materials, were of the small quantities normally required for quality control purposes. They were not sufficient to make the Factory embark upon chemical synthesis on any meaningful scale.

4. Al Shifa Factory lacked the equipment and apparatus essential for conducting any chemical synthesis, be it drugs or nerve agent. It also lacked accessories such as cones, sockets, stopcocks, metal taps, valves, tubings and coolants such as dry ice and liquid nitrogen which are essential for obtaining low temperatures. For instance the Factory owned none of the bits-and-pieces of glassware and substances which could be used, to set up a generator for the synthesis of phosphorus oxydichlorofluoride, $OPCl_2F$, a starting material for the synthesis of some poisonous derivatives of fluorophosphonic acid (J. Chem. Soc. , 1948, 1010).

5. Machinery and equipment procured by the Factory were of the standard type used in pharmaceutical formulation, shaping and packaging, they were mainly units for drying, sterilization, filtration, packaging, filling, plugging, hardness testing, friability testing, mixing, blending, spray-

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drying, fluidized bed drying, compressing, feeding, loading, labelling, producing de-ionized and distilled water, generating steam and henceforth.

Storage and transportation of nerve agents is extremely hazardous. For example accidental release of VX in Utah, USA, in 1968 killed over 6000 sheep (Talanta, 1983, 30, 725). Residents in Amsterdam, Holland, suffered mysterious health problems in 1992. These problems have recently been linked with the crash, in Amsterdam, of an Israeli air-craft secretly carrying 200 litres of a precursor chemical to Sarin, while enroute from USA to a biological weapons' plant in Israel. Aversion of such hazards prompted some countries to allocate massive budgets to develop "binary weapons" in which two chemicals which react to produce the nerve agent are mixed in the gas projectile after it has been fired.

The examples cited above point to the necessity for adopting highly stringent safety conditions in a factory that produces nerve agents, and to the serious consequences that ensue if a nerve agent or its immediate precursor is ever released in the plant or to its surrounding environment, at any stage between synthesis and use. Therefore staff working in a chemical weapons' factory have to wear overall body protecting clothes, from toe to head-hair. Such protection facilities have not been found to exist in Al Shifa Factory.

Manufacture of nerve agents requires the setting up, within the premises, of a completely isolated area and a leak-proof niche; and as low levels of nerve agents are found to be detrimental, highly sensitive detection methods are necessary for monitoring continuously their levels in the laboratory and its surrounding environment. Al Shifa Factory had never set up or owned such facilities. In fact Al Shifa Factory was an open

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facility for the training of university students, receiving state visitors, scientists, businessmen and public dignitaries.

As an indirect support to the facts that emerged from this investigation, it is relevant to cite here some of the international responses to the destruction of Al Shifa Factory.

The United States Government officials first claimed their evidence that Al Shifa Factory produces nerve agents, was based on material collected from equipment and containers in the plant; in their opinion that material has no commercial use other than in the synthesis of the nerve agent VX. Soon after, they dropped this allegation and said that their evidence was more based on a soil sample, collected from outside the factory, which contained the VX precursor Empta. In an ABC News com. (Washington, August 26, 1998) Barbara Starr quoted the United States Officials saying they did not know with certainty whether the VX precursor was manufactured at the plant, was stored there or simply represented a small quantity for research and development.

Professor Williams, FRS, at Oxford University, Inorganic Chemistry Laboratory, in his comment (letters to the editor, the Independent, 26 August, 1998) writes:

" Types of the compound an ethyl phosphorus derivative can be bought on the open market. If every laboratory which has such a chemical is to be bombed, then it is goodbye to many chemistry departments in the UK and USA and all over the world ". He also stated that the compound in question is linked to other synthetic chemical compounds like insect and nematode agricultural nerve poisons.

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Some of the most important conclusions that could be drawn from the foregoing analysis in this section of the report are cited hereunder.

1. Al Shifa Factory was a pharmaceutical formulation plant, not a plant for chemical synthesis of pharmaceutical products .
2. The Factory did not procure, at any time, special equipment or apparatus for chemical synthesis.
3. The Factory did not procure the chemicals essential for the synthesis of any poisonous organophosphorus compounds.

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7. BUILDINGS AND BUILDING EQUIPMENT

Al Shifa Factory was situated at the north-east end of the industrial area of Khartoum North township, on an area approximately 20800 m².

The directives of the owners were that the Factory design should meet all the requirements of good manufacturing practice (GMP) with respect to the production of human and veterinary drugs, and also with regard to engineering design, building materials, internal finishings, services, utilities, fire protection, environmental conditions, machines layout, safety factors... etc.

The main design consultant to the Factory was the local firm called "Centre for Technology and Consulting Studies" (CENTECS). However, obligations to meet specialised specifications required for certain functions, embodied inside the special consideration for GMP, dictated the need to employ expertise of foreign consultants; namely: Henry Jacobe, an American expert, Tomas Carnaffin, a British engineer, and Dr. Eid Abdalla, Dr. M. Abdalwahid, and Faysal Al Ra'ai, Jordanian engineers. Some Indian experts were also employed to assist in the installation of equipment.

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AL SHIFA FACTORY BUILDINGS

Drug manufacturing at Al Shifa Building Complex was grouped into four distinct factories.

1. The Beta-Lactam Factory

The Beta-Lactam Factory consists of :

Three production halls and two production lines, one for suspensions and the other for capsules and tablets. It included rooms for grinding, sizing, blending, holding, filling, plastering and packing.

This Factory also incorporated, raw materials stores, finished products stores, dispensary, weighing rooms, machine washing and quality control laboratory.

The total area of the Beta-Lactum Factory amounted to 886 m².

2. The General Factory, (total area 1972 m²) incorporating:

- (i) Liquids and syrups section,
- (ii) Capsules, tablets and ointment section,
- (iii) Injectables section

The General Factory also housed the following facilities: Raw Materials Stores, Finished Goods Stores, Water Treatment Plant, Reception, Laboratories and Technical Administration Building.

3. Veterinary Drugs Factory

The Veterinary Drugs Factory was designed for the production of powder, Boli, tablets and ointments for veterinary use. The first floor contained machines for mixing, blending and storage tanks, whereas the ground floor contained filling lines for powder and Boli.

The total area of the Veterinary Drug Factory was approximately 600 m²

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4. WARE-HOUSE & T.B. FACTORY BUILDING

The ware-house was an imported pre-fabricated steel building, having a total area of 2550 m².

The Tuberculosis (T.B) Factory (Red Area) was incorporated in the far north-east corner of the ware-house building. This Factory was added at a later stage

Al Shifa Factory complex of buildings included accommodation for the following Building Services and Utilities :

Air-Conditioning , water supply , sewage system, electricity.

The Factory also accommodated the following Industrial Services And Utilities, supplied to the different production areas in the Factory Buildings :

Compressed air, steam and hot water, de-ionized water, vacuum cleaning, smoke detectors and fire-lighting equipment.

Factory Construction : A Chinese construction company, was chosen as the main contractor, for the construction of Al Shifa Factory. The contract was signed in 1991 and construction works started immediately after. Different sub-contractors were, however, employed on the factory construction,

Due to the changes in planning and function of Al Shifa Factory the execution was protracted; it started in 1991 but the building was only completed in December 1996. Machines and equipment were ready for production by 1997 when commissioning was started; yet the Factory was officially opened in June 1998.

EVALUATIONS

For the purpose of evaluation Al Shifa Factory assets can be grouped into four categories :

- a) Land, buildings, civil works and civil services.
- b) Utilities and industrial services.
- c) Production machinery and equipment, and laboratory equipment.
- d) Fixtures, furniture and administration services.

Each of the above categories was evaluated separately according to certain procedures; and then summed up to give the total value of the assets.

Methodology

- The project had been accomplished between 1991 and 1997, but most of the construction works executed by the Chinese contractor were not completed before mid 1995.
- Most of the cost of imported materials and workmanship of construction was paid for in foreign currency.
- The cost of local materials and workmanship which was paid for in local currency was converted to foreign currency at the average prevailing exchange rate at the time of purchase or execution.

Costing

A) Land, buildings and civil works :

- Land : For costing purposes the value of land included the cost of site clearance and land preparation which involved also compaction works. This was calculated on the basis of unit area cost, then multiplied by the total project area.

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• **Buildings and Civil Works :**

- a) The buildings and civil works were evaluated by computation from prices in the Bills of Quantities.
- b) The cost of workmanship was calculated from the value of construction contracts and actual payments to the contractors.
- c) The cost of engineering consultation for design and supervision was calculated at 5% of the total cost of building construction and civil works.

B) Utilities and industrial services :

These include the air-conditioning system, steam production, compressed air, electrical power, treatment of production water, handling machines and equipment. For costing purposes these were evaluated according to items a, b and c below.

- a) For the evaluation of the above items, the CIF value of invoices and actual payments for the procurement of supplies of machinery and equipment were taken into consideration.
- b) 7% of their cost was added to cater for customs, port duties and clearance charges.
- c) The cost of erection, installation and commissioning was considered as 15% of the CIF value of machinery, equipment and devices.

C) Production machinery and equipment :

These include all the machines, equipment and devices used for production, and were evaluated according to items a, b, and c below.

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- a) The CIF values of machinery and equipment were taken from the invoices and the records of actual payments for procurement.
- b) The value of customs, port duties and clearance charges were calculated as 7% of the CIF value of machinery and equipment.
- c) The costs of erection, installation and commissioning was calculated as 15% of the CIF value of machinery and equipment.

D) Furniture, fixtures and administrative services :

These included : Telephones, automobiles, office equipment and catering equipment .

Most of the furniture was imported; some was procured from the local market. Invoices and records of actual payments for procurement were considered in the evaluation. The total value of furniture was calculated from actual records of payment.

SUMMARY COSTING

A- LAND, BUILDINGS AND CIVILS WORKS	U.S.\$	7 436 492.10
B- UTILITIES AND INDUSTRIAL SERVICES		4 731 271.34
C- PRODUCTION MACHINERY AND EQUIPMENT		8 136 795.78
D- FURNITURE, FIXTURES AND ADMIN. SERVICES		706 887.93
TOTAL	U.S.\$	21 011 447.15

TOTAL COST ESTIMATED AT TWENTY ONE MILLION ELEVEN THOUSAND FOUR HUNDRED AND FOURTY SEVEN U S DOLLARS AND FIFTEEN CENTS

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OTHER COST ITEMS

The cost estimates of the preceding sections to the value of twenty one million, eleven thousand, four hundred and forty seven U.S. dollars and fifteen cents (U.S.\$ 21 011 447.15) relate only to Al Shifa buildings and building equipment evaluations, based on 1994 prices, escalated to match yearly increases in market prices of materials and assets from mid 1994 to mid 1998.

No doubt a realistic estimate of losses, resulting from the destruction of Al Shifa Factory must include other important cost items, whether direct or indirect.

For example, the following additional cost items may be considered, without prejudice to the Factory owners or any other party making further claims for compensations to redress damages consequent upon the destruction of Al Shifa by U.S. air strike.

1. Manufactured drugs, which were ready for despatch, at the time of Al Shifa air-strike. Materials in stock, including chemicals, bottling and packing materials, spare parts for machines and equipment, in addition to other sundries. Compensations for injury inflicted on personnel present on site at the time of missile attack. Loss of jobs to some 300 Factory employees.
2. Loss of revenue from detrimental effects on the national herd of stock, due to absence of veterinarian drugs and medicines produced by Al Shifa.
3. Health impairment to population, from lack of medicines and drugs manufactured by Al Shifa.

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4. Extra expenses due to price differences between Al Shifa products and their imported equivalents.
5. Expenses incurred by Sudan in meeting all obligations from follow-up activities, overseas travel, consequent upon the U.S. offensive and impact of Al Shifa destruction on the overall country economics and mode of investments, affecting the local market and foreign trade dealings.

Many of the above items would no doubt require detailed analysis and evaluations by professional estimators and quantity surveyors, in addition to assistance of lawyers and many other specialists.

8. ENVIRONMENTAL IMPACT

The production objectives of Al Shifa Pharmaceutical Factory were confined to the manufacture of human and veterinary drugs and medicines.

It must be emphasized that Al Shifa Factory was exclusively a formulating plant for the manufacture of pharmaceutical products from already synthesized chemical raw materials, which were imported from renown international companies. Thus Al Shifa Factory did not engage itself at any time in the synthesis of pharmaceutical chemicals.

As such the production activities at Al Shifa Factory did not lend themselves to the generation of gaseous pollutants such as: carbon monoxide, oxides of sulphur, oxides of nitrogen, hydrocarbons or other organic substances. Nor does Al Shifa Factory emit any particulate matter or discharge toxic heavy metals such as mercury, arsenic, lead and cadmium.

Waste water from all factory units, was drained to septic tanks and then led to soak-away wells. Effluent water containing spent chemicals was diluted in a special antacid tank, before it was allowed to drain to the wells.

Since commissioning of Al Shifa plant, employees and visitors of all delinations, had never been provided with gas masks, or special protective clothing.

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No incidents attributed to chemical pollutants or gaseous poisoning had ever been reported, amongst the employees of the Factory.

In the light of the above considerations, it is understandable, that the authorities approved founding Al Shifa Factory in its present location within the industrial area of Khartoum North

The surprise military air strike on Al Shifa on 20th August, 1998 turned the entire Factory into ruins and debris, which continued burning for the best part of a week.

The resulting heap of debris containing splashed chemicals from raw materials and finished products stores was bound to throw into the atmosphere particulate matter, gaseous acidic oxides of sulphur and nitrogen and volatile organic chemicals, which resulted from the thermal decomposition of the splashed pharmaceutical chemicals. The aforementioned pollutants are known to interact with solar radiation to generate the more harmful components of photo-chemical smog. These components are known to create health problems and could lead to more serious effects among susceptible people

Immediately following the air strike, top government officials and masses of people from the national capital flocked to the Factory site. They have all been seen walking with fire-fighting teams around the burning debris and ruins of the Factory. If at all the authorities were in doubt about the nature of Al shifa Factory manufacturing activities, they would not have ventured to enter what would have been otherwise a highly poisonous and deadly atmosphere

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No doubt the crowds who rushed to the site would have, nevertheless, inhaled polluted air.

In the rainy days of August, September and early days of October, rains would have carried some of the soluble pharmaceutical chemicals on the ground, out of the Factory site to the agricultural farms in the surrounding vicinity of the Factory. Some of this polluted run off may have infiltrated to the subsurface water.

Immediately after the air strike The Sudan Government had placed the Factory site under guard in anticipation of an independent UN or international investigation on the nature Al Shifa Factory and its manufacturing processes.

However, notwithstanding the Sudan Government obvious motives in preserving the site as it is, after the air-raid, for the time being, this measure would no doubt result in the site continuing to be a source of pollution

Apart from the obvious material damage and total loss of Al Shifa facility as a manufacturing plant for essential human and veterinary drugs and medicines, the air strike has created unfavourable environmental conditions to the surrounding of the Factory and near-by residents, and has caused them deep anxiety and worry about future prospects of their well-being.

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9. LEGAL ASPECTS

On the 20th of August 1998 the U.S. Government directed a military air strike against the Sudan which resulted in the destruction of Al Shifa pharmaceutical Factory in the city of Khartoum North. The strike was launched in the aftermath of the bombardment of the two American embassies in Kenya and Tanzania.

The question which arises is whether the American military air strike on Al Shifa Factory constitutes a lawful act justified by international law and the U.N. Charter, governing international relations between member states.

In their opinion the U.S. Government justified their offensive against the Sudan by referring to two legal principles :

Firstly :

Exercising the right of self-defence under Article (51) of the United Nations Charter.

Secondly :

Fighting international terrorism.

Rules Governing the Use of Force :

Generally the use of military or armed force, in international relations, is prohibited by international law. This is provided for in several provisions in the United Nations Charter and other international documents.

The principles and rules governing the use of force against a U.N member state are provided for in Article (2), paragraph 4 of the U.N

Charter which stipulates that members of the U.N. Organization shall refrain, from the use of force or threatening the use of force against the territorial integrity and political independence of any state.

Thus the obligation which is laid down by Article 2(4) of the Charter is binding on all U.N. member states in their exercise of international relations.

However, the Charter permitted the use of force in the case of self-defence, as an exception to the prohibition, in accordance with Article (51) of the Charter which reads " Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security"

It is clear that Article (51) mentioned above specifies the case which allows the state to use force in self-defence i.e. when an armed force is used against that state. The purpose of using such force by a state is to defend its sovereignty, territorial integrity and its political independence. The said article restricts the exercise of this right to the case of a military aggression against the state exercising such right, until the Security Council takes the necessary measures.

The above-mentioned Article considers the use of force for self-defence as a "Provisional Remedy" until the Security Council takes

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the necessary measures by virtue of being the organ responsible for the preservation of international peace and security according to the provisions of the Charter. The state or states acting in the exercise of self-defence are legally bound to report immediately to the Security Council the measures taken in the exercise of the right of self-defence. They can take such measures only and until the Security Council has taken the measures necessary to maintain international peace and security as provided for in Article (51).

Referring to the case of Sudan it is clear that the Sudan did not direct any armed or military aggression against the U.S.A. Moreover Article (51) allows the use of force by way of an exception to the general rule, prohibiting the use of force, when the U.N. organs fail or are unable to take any action to stop the military or armed aggression directed against the sovereignty and the integrity of territories of a member state

The Resolution issued by the General Assembly of the United Nations No. 3314 (39) dated 14 December, 1974 defined Aggression in Article (1) "as the use of armed force by a state against the sovereignty of another state or its regional integrity or political independence or in any other form considered to be inconsistent with the Charter of the United Nations".

Article (2) of the above-mentioned Resolution provided that a state commencing the use of force against another state is considered to be violating the Charter and the action is considered to be a prima facie evidence of an act of aggression.

Article (3) of the Resolution enumerates the acts which constitute aggression among which is included the launching of armed forces by any

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state against the region of another state by bombing or the use of any force against the region of such other state. No political or economic or military or any other considerations whatsoever shall be acceptable as a justification for the commission of such an aggression. Aggression is a crime against international peace, and results in international responsibility (Article 5.2).

The use of force is regarded as lawful in another case by customary international law i.e. the protection and rescue of one's state nationals in case of existence of danger to the life and property of its nationals in another state.

The use of force is then lawful since it is regarded to be exercised in case of necessity. However, the use of force in such a situation is to be considered lawful when specified conditions are satisfied so that the right is not to be misused. The conditions to be satisfied to exercise such right are in case of existence of danger justifying the necessity of self-defence, and it should be instant, over-whelming leaving no choice of means and no moment for deliberations.

The use of force in accordance with the above mentioned principle does not apply to the act of the U.S. Government against the Sudan as there was no imminent danger to its nationals or interests in Sudan justifying an exceptional situation for the use of lawful force.

Fighting International Terrorism

International law jurists disagree as to the use of armed force by one state against another state accused of supporting international terrorism or involved in similar acts. However, if it is proved by evidence that a state is supporting or involved in such acts which endanger international peace

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then the Security Council is the organ which is competent to submit its recommendation or decide the measures to be taken in accordance with Article (41) and (42) of the Charter, which provides for the measures to be taken to preserve international peace and security. Article (41) provides that the Security Council shall decide the measures to be taken which may require the use of armed force to enforce its resolutions. In doing so it may require the members of the United Nations to implement such measures which may include the stopping of economic, transportation and or diplomatic relations.

By Article (42) the Security Council, if convinced that the measures provided for in Article (41) are not sufficient may then take the necessary steps to preserve international peace and order.

In addition, the principles or rules of international responsibility could be applied if it is proved that a state is involved in acts of terrorism. In such a situation the case may be submitted before international arbitration or the International Court of Justice or be settled by diplomatic modes of settling international disputes.

Terrorism is an international crime which requires the co-operation of all member states through the conclusion of international agreements. Fighting against terrorism is not the responsibility of one state but the responsibility of the United Nations.

It is to be concluded that, the military strike of 20th August, 1998 by the U.S. Government against Sudan is not justified by international law and the U.N. Charter. Indeed, it constitutes a violation of international law and is inconsistent with the United Nations Charter which is binding on all member states.

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By their launching a military air strike on Al Shifa Pharmaceutical Factory, the United States Government has committed an act of aggression and is thus legally responsible to redress the damages which resulted from their action.
